

We claim:

1. An hydraulic proportioning system comprising:

a fluid actuated motor having a driven motor shaft, the motor being in fluid communication

with a fluid source;

a first pump having a drive shaft, an inlet and an outlet, the inlet of the first pump

connectable to a first chemical;

a drive clutch connected to the driven motor shaft and the drive shaft; and

an injector manifold in fluid communication with the fluid source and having an inlet in fluid

communication with the outlet of the first pump.

2. The system of claim 1 wherein the injector manifold has an outlet, the system further comprising a reaction tube in fluid communication with the injection manifold outlet, the reaction tube comprising:

an inlet;

an outlet; and

a check valve connected to the outlet.

3. The system of claim 2 further comprising a chamber, and wherein the reaction tube is disposed to extend into the chamber, the chamber comprising:

a chamber inlet in fluid communication with the fluid source; and

a chamber outlet.

4. The system of claim 3 wherein the system further comprises a check valve the check valve being in fluid communication with the outlet of the first pump and the inlet of the injector manifold.

5

5. The system of claim 4 wherein the chamber has a transparent portion.

6. The system of claim 5 further comprising a second pump, connected to the drive shaft of the first pump and powered thereby, and a second chemical wherein the second chemical mixes with the first chemical in the reaction tube and then mixes with fluid from the fluid source in the chamber and are discharged from the chamber outlet, the second pump comprising:

an second pump inlet;

a second pump outlet; and

a second pump check valve in fluid communication with the second pump outlet and the injector manifold inlet.

7. The system of claim 1 further comprising:

a second pump connected to the drive shaft of the first pump and powered thereby, the second pump having an inlet and an outlet, the inlet of the second pump connectable to a second chemical;

a first tube connected to the injector manifold and receiving the first chemical from the first pump, the first tube having an outlet in fluid communication with the chamber;

a second tube connected to the injector manifold and receiving the second chemical from the second pump, the second tube having an outlet in fluid communication with the chamber; and

a pair of injection check valves, each of the check valves connected to one of the outlets of the first and second tubing.

8. The system of claim 7 further comprising a chamber, and wherein the first and second tubing are disposed to extend into the chamber, the chamber having a chamber inlet in fluid communication with the fluid source so that the first chemical and the second chemical from the first and second tubing mix with fluid from the fluid source in the chamber and is discharged from the chamber outlet.

9. The system of claim 8 further comprising a pair of check valves in fluid communication with the outlets of the first and second pumps and with the inlet of the injector manifold.

10. The system of claim 9 wherein the chamber has a transparent portion.

11. The system of claim 1 wherein the driven motor shaft is reciprocatingly driven by the fluid actuated motor, and wherein the drive clutch further comprises:

an input drum rotated by the driven motor shaft;

an output mandrel connected to the drive shaft;

spring means for connecting the input drum and the output mandrel, imparting rotation to the drive shaft, and returning the input drum with the driven motor shaft.

12. An hydraulic proportioning system comprising:

an fluid actuated motor having a driven motor shaft, the motor being in fluid communication
with a fluid source;

a first pump and a second pump, each with an inlet and an outlet, having a common drive
shaft;

a drive clutch connected to the driven motor shaft and to the drive shaft, the drive clutch
further comprising:

an input drum rotated by the driven motor shaft;

an output mandrel connected to the drive shaft;

spring means for connecting the input drum and the output mandrel, imparting
rotation to the drive shaft, and returning the input drum with the
driven motor;

an injector manifold having:

an outlet;

a first inlet connectable to a first chemical;

a second inlet connectable to a second chemical;

a pair of check valves, each one of the check valves in fluid communication with one
of the outlet of the first pump and the outlet of the second pump;

a chamber with a chamber inlet in fluid communication with the fluid source and a chamber
outlet; and

a first tube and a second tube supported by the injector manifold and disposed to extend into the chamber, both the first and second tubing in fluid communication with the injection manifold outlet, each tube comprising:

an inlet;

an outlet; and

a check valve connected to the outlet.

5

Q

party.

Mean

concord

840918v14

14. A method for producing a source of ClO_2 , the method comprising:

driving a driven motor-shaft of a water motor, the motor being in fluid communication with
a water source;

driving a common drive shaft of a first protic acid pump and a second chemical pump with
the driven motor-shaft;

controlling the movement of the common drive shaft with a drive clutch connected to the
driven motor-shaft and to the drive shaft, the drive clutch further comprising:

an input drum rotated by the driven motor-shaft;

an output mandrel connected to the drive; and

spring means supported between the input drum and the output mandrel;

pumping a protic acid from a container through an injector manifold in fluid communication
with the water source;

pumping a sodium chlorite solution from a container through the injector manifold;

mixing the protic acid and the sodium chlorite solution into a mixture in the injector
manifold;

and

dispensing the mixture from the injector manifold.

15. An hydraulic proportioning system comprising:

a fluid actuated motor having a driven motor shaft, the motor being in fluid communication with a fluid source;

a pump means for pumping a first chemical, the pump means driven by the fluid actuated motor;

an injector manifold in fluid communication with the fluid source and having an inlet in fluid communication with the outlet of the pump means.

16. A fluid proportioning system comprising:

a housing; and

means for driving the proportioning system by a fluid and diluting at least one chemical with the fluid.